# MANUAL CHANGES

**MANUAL IDENTIFICATION**

**Model Number:** 8620C
**Date Printed:** OCTOBER 1977
**Part Number:** 08620-90093

This supplement contains important information for correcting manual errors and for adapting the manual to instruments containing improvements made after the printing of the manual.

**To use this supplement:**

Make all ERRATA corrections

Make all appropriate serial number related changes indicated in the tables below.

| Serial Prefix or Number | Make Manual Changes |
|---|---|
| 1933A | 1 |
| 2018A | 1, 2 |
| 2036A | 1,2,3 |
| 2049A | 1, 2, 3, 4 |
| 2104A | 1, 2, 3, 4, 5 |
| 2123A | 1, 2, 3, 4, 5, 6 |
| ► 2126A | 1,2,3,4,5,6,7 |

| Serial Prefix or Number | Make Manual Changes |
|---|---|
| | |
| | |
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| | |
| | |

The following Service Notes are available from your local HP Sales and Service Office.

| SERVICE NOTE | SERIAL NUMBER | DESCRIPTION |
|---|---|---|
| 8620C-1 | Prefix 1604A and 1604U00217 and below | Replacement of A7 Assembly |
| 8620C-2 | All serials | 8410B Auto-Frequency Model Interface Cable. |
| 8620C-3 | All serials | Modification to turn on 8620C in CW MODE. |
| 8620C-4A | Prefix 1933A and below | HP-IB (Opt 011) Installation Kit |
| 8620C-5A | Prefix 1933A and below | Elimination of Frequency Shift in Opt. 001 |

► NEW ITEM

**NOTE**

Manual change supplements are revised as often as necessary to keep manuals as current and accurate as possible. Hewlett-Packard recommends that you periodically request the latest edition of this supplement. Free copies are available from all HP offices. When requesting copies quote the manual identification information from your supplement, or the model number and print date from the title page of the manual.

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## ERRATA

Page 1-2, Figure 1-3:
Delete the HP-IB INTERCONNECT CABLE.

Page 1-7:
Add the following after paragraph 1-31A (1-31A is part of CHANGE 3):
1-31B. Option 820 provides a cable (see Figure 1-6) to interconnect the 8620C with the 8410B. This cable enables the 8410B to phase lock properly.

Page 1-7, Paragraph 1-34:
Change the second sentence to read: HP-IB connector/adapter (08620-60130), is supplied with the 8620C Option 011 (see Figure 1-3).

Page 1-10, Paragraph 1-46:
Change the HP Part No. for the 2 metre cable to: 8120-1834.

Page 2-1:
Add the following after Paragraph 2-13.
2-13A.

**WARNING**

**If the instrument is to be energized through an autotransformer, make sure the common terminal of the autotransformer is connected to the protective earth contact of the power source outlet socket.**

**Any discontinuity in the protective ground, inside or outside the 8620C, is likely to create a safety hazard.**

Page 2-5, Paragraph 2-30:
Change the third sentence to read:
Use one of the cables listed in Figure 2-6 to interface the 8620C Sweep Oscillator with the HP-IB.

Page 2-7, Figure 2-6:
Change HP Part No. of 2 meter cable to: HP 8120-1834.

Page 2-8, Paragraph 2-38:
Change step d. to: Install HP-IB cable.

Page 2-9, Figure 2-9:
Delete the part no. of the HP-IB cable.

Page 3-9:
Add the following after paragraph 3-46.

### 3-46A. CW Filter Capacitor Status Under Remote Programming

3-46B. The status of the RF Plug-in FM mode switch (FM/NORM/PL) and the 8620C Sweep Mode (AUTO/EXT/MANUAL) affect CW performance in the remote digital modes (M1: Full Sweep, M2: CW Delta F, and M4: Marker Sweep). These two switches determine whether or not a large capacitor is switched into the tuning coil circuit. The capacitor is used to reduce the Residual FM but also increases settling times. For most applications, minimum tuning hysteresis and maximum speed are important so the CW capacitor is undesirable. To disable the capacitor there are two solutions: 1) the RF Plug-In FM switch is in FM or PL, or 2) the RF Plug-In FM switch is in NORM and the 8620C Sweep Mode switch is in AUTO or EXT.

## ERRATA (Cont'd)

3-46C. If the capacitor is disabled, the Residual FM will increase by a factor of 2 to 4 and settling times will decrease by 3 to 4 times (Plug-In dependent). If longer settling times are not critical and Residual FM is, then the capacitor should be enabled. Now a third item must be considered: whether or not a jumper is installed on the 8620C A3 Logic Assembly (See Service Sheet 5). This jumper forces a "manual" sweep mode (hence uses the CW capacitor) in the digital modes. To enable the capacitor, the RF Plug-In must be switched to NORM and either of the following must be true: 1) the 8620C Sweep Mode is switched to MANUAL or 2) the jumper is installed on the 8620C A3 Logic Assembly.

3-46D. The first is a temporary solution, the second permanent until the jumper is removed. The jumper is not presently installed at the factory.

3-46E. For manual and remote CW (M3, M7) modes, the capacitor is enabled only if the Plug-In FM switch is in the NORM position.

Page 4-17, Paragraph 4-18, Step 1:
Change instructions in step a as follows:

A. MARK 1 , 2 0 0 0

B. MARK 1 , 1 0

C. MARK 1 , 4 5 0 0

D. MARK 1 , 1 0

E. MARK 1 , 2 3 5 0

F. MARK 1 , 1 0

In step e, change last part of first line to read: "press STORE 2 EXECUTE ".

Page 4-18, Paragraph 4-18:
Change step g to read: "When lazy T ( ⊢ ) appears on the calculator display, LIST the program".

Page 5-5, Paragraph 5-17:
Change step b to read: "Connect oscilloscope to test point 5 on A7 (J6-6) and connect oscilloscope ground lead to test point 8 (ground) on A7."

Page 5-7, Paragraph 5-20:
Change NOTE to read: "If STOP MARKER potentiometer R6 or START MARKER potentiometer R22 has been replaced, refer to Paragraph 5-27 for mechanical zero."

Page 5-8, Paragraph 5-21:
Change step c and add step d to read:

c. Set Start Marker to 10 Volt mark on calibration scale. Set adjustment M (START FREQ HI) (A2R26) for DVM indication of +10.000 Vdc ± 0.005 Vdc.

d. Set Stop Marker to 0 Volt mark on calibration scale. Turn MANUAL control fully clockwise. Set adjustment L (STOP FREQ LO) (A2R25) for DVM indication of 0.000 Vdc ± 0.005 Vdc.

Page 5-10, Paragraph 5-24:
Change step f to read: "Rotate MANUAL control continually between full clockwise position and full counterclockwise position and set adjustment E (ΔF AMPLITUDE) (A2R42) for 0.000 Vdc ± 0.001 Vdc at counterclockwise position and +10.000 Vdc ± 0.001 Vdc at clockwise position.

**ERRATA (Cont'd)**

Page 6-4, Table 6-2:
Change A1CR13 to HP Part No. 1901-0743, Mfr Code 02682, Mfr Part No. 1N4004.
Change A1Q4, A1Q11, A1Q17, and A1Q19 to HP Part No. 1853-0451, Mfr Code 03046, Mfr Part No. 2N3799.

Page 6-8, Table 6-2:
Change A3R17, A3R18, and A3R19 to HP Part No. 0698-3440, RESISTOR 196.
Change A3R27, A3R28, and A3R29 to HP Part No. 0698-3453, RESISTOR 196K.

Page 6-9, Table 6-2:
Change A4CR4, A4CR8, and A4CR11 to HP Part No. 1901-0743, Mfr Code 02682, Mfr Part No. 1N4004.

Page 6-10, Table 6-2:
Change A5CR5, A5CR6, A5CR10, A5CR11, and A5CR12 to HP Part No. 1901-0743, Mfr Code 02682, Mfr Part No. 1N4004.
Add A5MP5, HP Part No. 1205-0011, HEAT SINK TO-5/TO-39-CS, Mfr Code 05792, Mfr Part No. TXBF-032-025B. (Recommended addition).
Change A5Q6 to HP Part No. 1853-0451, Mfr Code 03046, Mfr Part No. 2N3799.

Page 6-12, Table 6-2:
Change A7Q17 to HP Part No. 1853-0451, Mfr Code 03046, Mfr Part No. 2N3799.
Change A7R7 to HP Part No. 0698-0085, RESISTOR 2.61K.
Change A7R18 to HP Part No. 0698-0085, RESISTOR 2.61K.

Page 6-13, Table 6-2:
Change A9/A10 to HP Part No. 08620-60150, Board Assembly Switch Interconnect.

Page 6-14, Table 6-2:
Change A12 to RECOMMENDED REPLACEMENT HP PART No. 08620-60154 which includes service kit and instructions.
Change B1, HP Part No. 3140-0490, to B2.

Page 6-15, Table 6-2:
Change J1 HP Part No. and Description to: 1250-0118, CONNECTOR RF BNC FEM SGL-HOLE-FR 50-OHM.
Change J6 HP Part Number to 1251-5046, Mfr Code to 28480, and Mfr Part Number to 1251-5046.
Add J8, HP Part Number 1250-0118, CONNECTOR-RF BNC Fem Sgl-Hole-Fr 50-ohm.
Change Q1 and Q3 to HP Part No. 1853-0344, Mfr Code 0237, Mfr Part No. 2N5876.
Change Q2 and Q4 to HP Part No. 1854-0743, Mfr Code 02037, Mfr Part No. 2N5878.
Change S1 to HP Part No. 3101-1957, SWITCH-PB DPST-NO Alting 10.5A 250VAC, Mfr Code 04757, Mfr Part No. 676-121-A1H.
Under MISCELLANEOUS PARTS:
Add HP Part No. 08620-00084, SWITCH, SHIELD.
Add HP Part No. 0362-0265, CD7, 7 CONNECTOR=SGL CONT SKT 1-14mm BSC-SZ, 02848 (used on T1 and W1 to connect to FL1).
Delete HP Part No. 08620-60123.
Add HP Part No. 1251-4400, CD6, CONNECTOR 50-PIN MICRO RIBBON (OPT 001).
Add HP Part No. 8120-2208, CD 8, CABLE 8410B INTERFACE.
Change the HP and Mfr Part Number of W1 to: 08620-60170. (Preferred part; install as per CHANGE 6.

Page 6-17, Figure 6-1:
Change No. 45 to HP Part No. 08620-20106 (Recommended Replacement).
Change No. 46 to HP Part No. 08620-20107 (Recommended Replacement).
Insert a second No. 46 HP Part No. 3050-1053, CD1, 5, WASHER FLAT, 28480.
Change No. 50 to HP Part No. 08620-20105.

Page 8-13, Figure 8-9:
Replace Figure 8-9 with Figure 8-9 (ERRATA) of this change sheet.

**ERRATA (Cont'd)**

Page 8-14:

FAST RETRACE Paragraph should read as follows:

"Transistors Q11 and Q9 and associated components provide a fast retrace on all sweep speeds except .1–.01 (fastest speed). During retrace time, U3B is preset. The $\overline{Q}$ output of U3B is low, turning Q11 on. The resultant output at the collector of Q11 is directly coupled to the input of Q9 turning it on. Each time Q9 is turned on, a +20V pulse is applied to the non-inverting input of Integrator U1. This higher voltage increases the current through the feedback capacitor (in the ramp generator feedback circuit) causing the lower ramp limit to be reached sooner, thus decreasing retrace time."

Page 8-15, Figure 8-10:

Change CR1 (located next to R57) to CR12.
Change R4 (located next to R42) to R41.
Change U19 to Q19.

Page 8-15/8-16, Figure 8-11:

Change Q4, Q11 and Q19 to HP Part No. 1853-0451.

Page 8-17, Figure 8-13:

Change Pin 16 at J2/W2P2 connection at Pin 19.
Change Q17 to HP Part No. 1853-0451.

Page 8-19, Figure 8-15:

Change supply voltage on A2U6 to –15V.
Change color code of wires on R5 (CW VERNIER) 917 to 97 and 97 to 917.

Page 8-21, Figure 8-17:

Delete C4.
Add jumper to A3 Logic Assembly schematic as shown in partial schematic, Figure 1.
Change R17, R18, and R19 to 196.
Change R27, R28, and R29 to 196K.
Add NOTE 1 to schematic diagram as follows:

NOTE 1. CW FILTER CAPACITOR JUMPER FOR REMOTE DIGITAL MODES. NOT INSTALLED AT FACTORY. THE FOLLOWING TABLES INDICATE THE STATUS OF THE CAPACITOR WITH AND WITHOUT THE JUMPER INSTALLED.

CW FILTER CAPACITOR STATUS WITH JUMPER NOT INSTALLED:

| RF Plug-In FM/NORM/PL Switch | 8620C Sweep Mode Switch | | |
|---|---|---|---|
| | MAN | AUTO | EXT |
| NORM | IN | OUT | OUT |
| FM | OUT | OUT | OUT |
| PL | OUT | OUT | OUT |

CW FILTER CAPACITOR STATUS WITH JUMPER INSTALLED:

| RF Plug-In FM/NORM/PL Switch | 8620C Sweep Mode Switch | | |
|---|---|---|---|
| | MAN | AUTO | EXT |
| NORM | IN | IN | IN |
| FM | OUT | OUT | OUT |
| PL | OUT | OUT | OUT |

**ERRATA (Cont'd)**

Page 8-23, Figure 8-18:
Transpose F1 and F2.

Page 8-23, Figure 8-19:
Delete Note 2.

Page 8-25, Figure 8-20:
Change R61 to R16.

Page 8-25, Figure 8-21:
Delete Note 2.
Change notation in A4 block to +9.2V.
Change Q6 to HP Part No. 1853-0451.

Page 8-28, SERVICE SHEET 9, CIRCUIT DESCRIPTION:
Change last sentence under Signal Detector to:
The ROM output lines that are true when ATN is false are described in Table 8-2.
Add Table 8-2 of this change sheet.
Page 8-29, Figure 8-25:
Change A12U2D pins 3 and 2 to pins 13 and 12, respectively.
Add pin 14 to A12U3 and connect to +5V.
Add pin 14 to A12U4 and connect to +5V.
Add pins 1, 8, and 13 to A12U19 and A12U20 and connect to ground.
The connection from A12U23 to the wiper of A12R11 should be labeled pin "44."
Add pin 16 to A12U24 and connect to ground.
Add pin 28 to A12U24 and connect to +15V.
Reverse S1 switch positions: Close all open switches; open all closed switches.
Add pin 4 to XA6 connection with the following notation: –15V.

Page 8-31, Figure 8-28:
Delete the mechanical interconnection ( - - - - - - ) between the wipers of BAND switch S2. Add designator S3 to the second wiper.
Change A7Q17 to HP Part No. 1853-0451.
Ad supply voltage to the top of Q18: "+5V."
Change A7R7 and A7R18 value to 2160Ω.
Change A7R12 value to 681Ω.
Change color code of wire from J7 pin 55 to J6 pin 26 to 948 wire.
Change A7 Operations Control Assembly No. to 08620-60137.
Change XA6 pin 7 to pin 5 (A12 Board, Band latch).

Page 8-33, Figure 8-30:
Delete Note 1.

Page 8-35, Figure 8-32 and
Page 8-37, Figure 8-34:
Add "NOTE 1" after "A10 Front Interconnect Assembly (08620-60120)."

NOTE 1: The A9/A10 Board Assembly Switch Interconnect is HP Part No. 08620-60150.

Page 8-37, Figure 8-33:
Interchange designators R3 and R5.

## ERRATA (Cont'd)

Page 8-39, Figure 8-36:
Change supply voltage for XA2-1, XA5-4, and XA6-4 to -15 Volts.
Add SIGNAL 'TRIG 2" to P2-Pin 36.

Page 8-41, Figure 8-37:
Change Q1 and Q3 to HP Part No. 1853-0344.
Change Q2 and Q4 to HP Part No. 1854-0743.

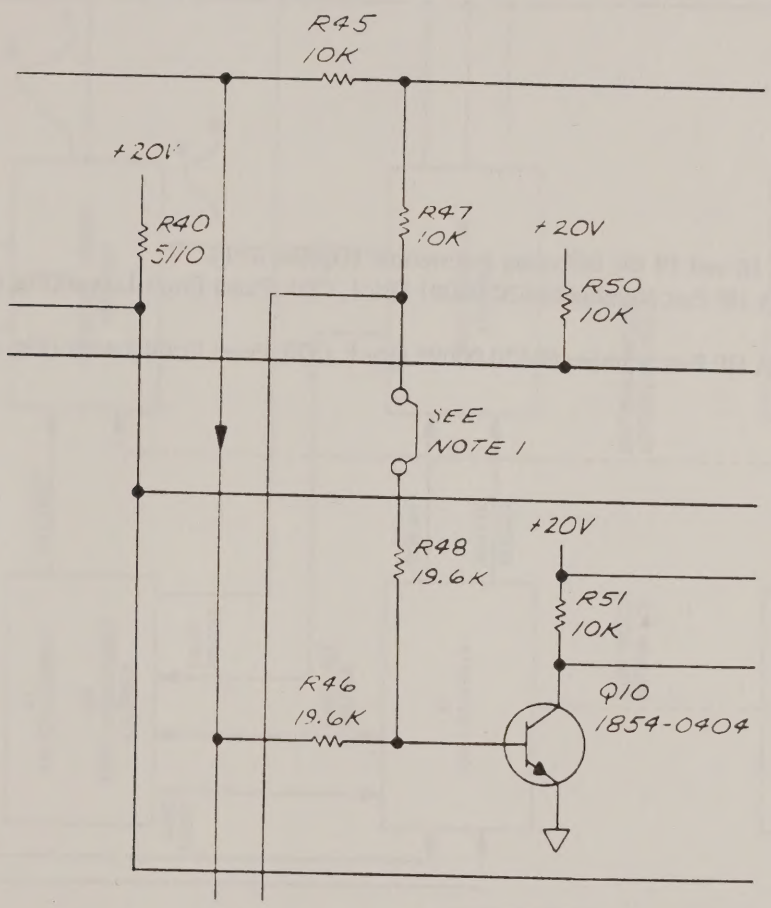



*Figure 1. Location of CW Filter Capacitor Jumper on A3 Logic Assembly*

## CHANGE 1

Page 6-17, Figure 6-1:
Change No. 44 quantity to 21.

## CHANGE 2

Page 6-14, Table 6-2:
Change A12 HP and Mfr Part No. to: 08620-60162 (Recommended Replacement). Order part number 08620-60154 which includes service kit and instructions.

Page 8-29:
Replace SERVICE SHEET 9, Figure 8-25 with attached Figure 8-25 (CHANGE 2).

## CHANGE 3

Page 1-7:

Insert the following paragraph after 1-31:

1-31A. Option A91 provides front panels (upper and lower), pushbutton knobs, and flipper drum in the colors provided before prefix number 2034.

Page 6-17, Figure 6-1 (1 of 4):

Add to Reference Designation 27 and 78 Description: (Option A91)

Add Reference Designation 27A HP Part Number 08620-40021, Qty 1, CD1, FLIPPER DRUM, 28480, 08620-40021.

Add Reference Designation 78A HP Part Number 0370-1389, Qty 5, CD5, Knob Round, 28480, 0370-1389.

Page 6-17, Figure 6-1 (2 of 4):

Add (27A) next to (27) .

Page 6-17, Figure 6-1 (4 of 4):

Add (78A) next to (78) .

Page 6-18, Figure 6-2:

Add to Reference Designations 18 and 19 the following description: (Option A91).

Add Reference Designation 18A HP Part Number 08620-00091 Qty 1, CD1, Panel Front Lower (Fig. 6-1), 28480, 08620-00091.

Add Reference Designation 19A HP Part Number 08620-00090 Qty 1, CD0, Panel Front Lower (Fig. 6-1), 28480, 08620-00090.

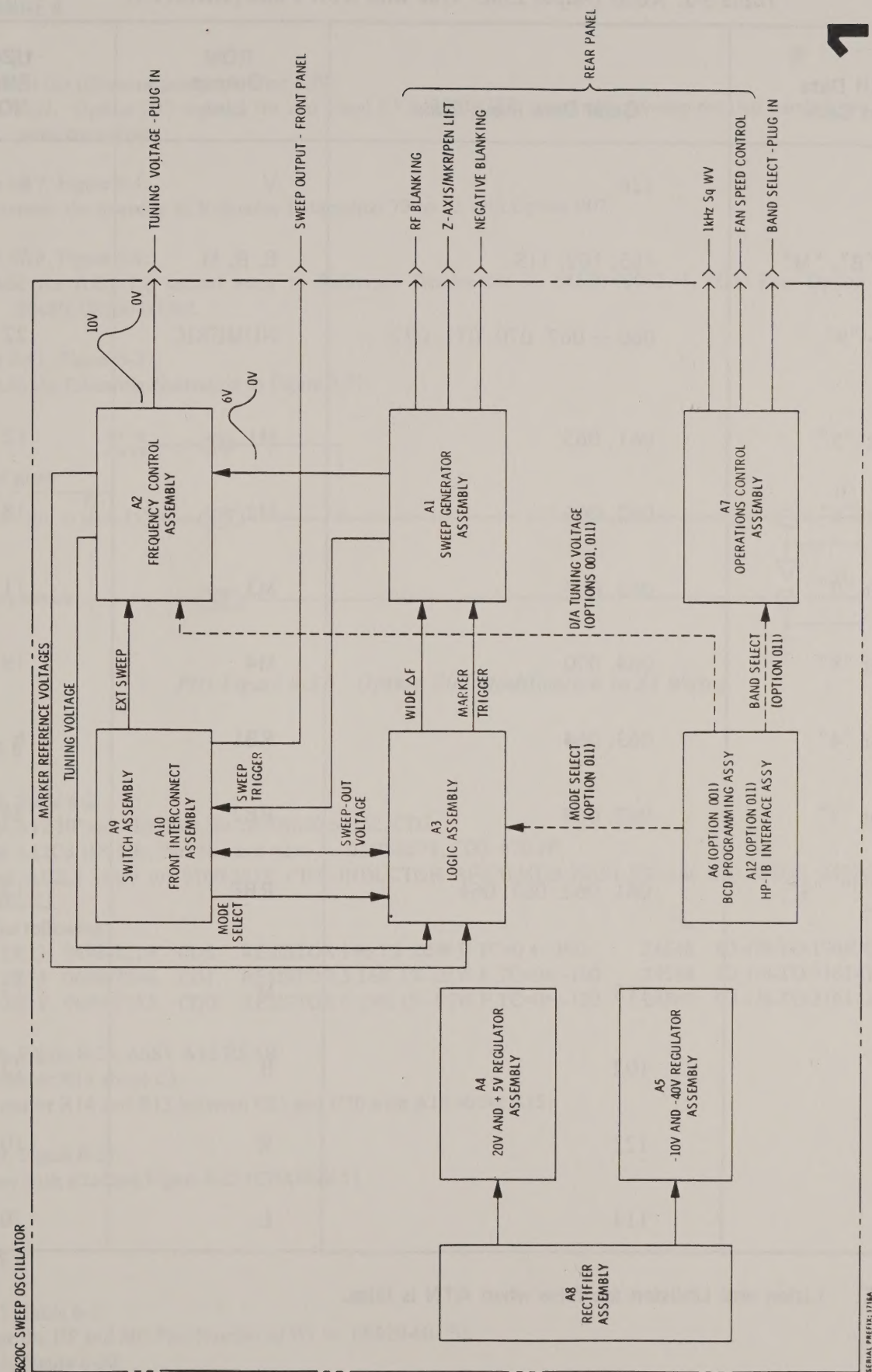



*Figure 8-9. Functional Block Diagram (ERRATA)*

*Table 8-2. ROM Output Lines True with ATN False (ERRATA)*

| ASCII Data Input Code | Octal Data Input Code | ROM Output Line | U24 PIN NO. |
|---|---|---|---|
| "V" | 126 | V | 8 |
| "E", "B", "M" | 105, 102, 115 | E, B, M | 7 |
| "0" – "9", ":" | 060 – 067, 070, 071, 072 | NUMERIC | 22 |
| "1" or "5" | 061, 065 | M1 | 12 |
| "2" or "6" | 062, 066 | M2 | 18 |
| "3" or "7" | 063, 067 | M3 | 11 |
| "4" or "8" | 064, 070 | M4 | 19 |
| "3" or "4" | 063, 064 | RB1 | 6 |
| "2" or "3" | 062, 063 | RB2 | 24 |
| "1", "2", "3", or "4" | 061, 062, 063, 064 | RBE | 13 |
| "M" | 115 | M | 17 |
| "B" | 102 | B | 23 |
| "R" | 122 | R | 10 |
| "L" | 114 | L | 20 |

NOTE: Listen and Unlisten are false when ATN is false.

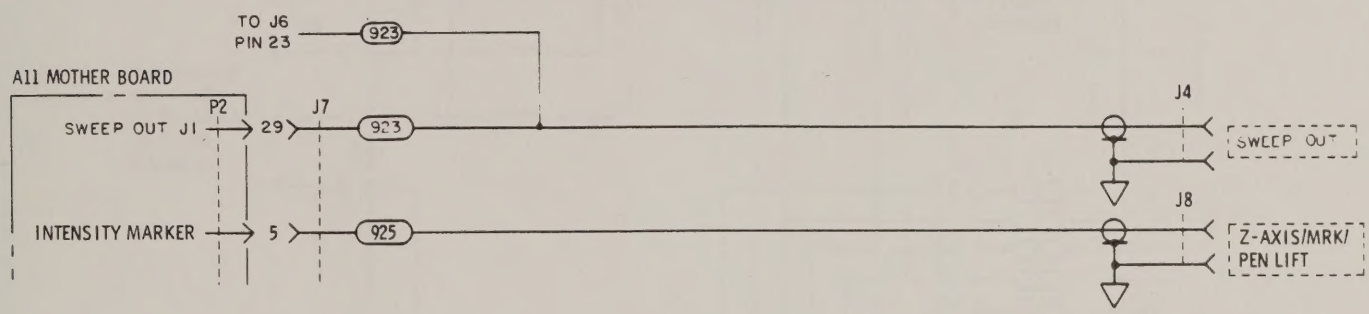
## CHANGE 4

Page 1-7:
Insert the following paragraph after 1-29:
1-29. Option 007 replaces the rear panel EXT. TRIGGER input with a Sweep out that parallels the front panel connector.

Page 6-17, Figure 6-1:
Increase the quantity of Reference Designation 79 to 10 with Option 007.

Page 6-18, Figure 6-2:
Add the following second entry to Reference Designation 3: 08620-00082, 1, Panel Rear Option 007), 28480, 08260-00082.

Page 8-41, Figure 8-37:
Add the following illustration to Figure 8-37:




*P/O Figure 8-37. Option 007 Modification to J4 Wiring*

## CHANGE 5

Page 6-14, Table 6-2:
Change A12 HP and Mfr. Part No. to: 08620-60162, CD3.
Change A12C3 HP, Mfr. Part No. and value to: 0160-0571, CD0, 470 PF.
Change A12L1 entry to: 9100-3313, CD7, INDUCTOR RF-CH-MLD 22UH 5% .166 DX .385LG, 24226, 15M222J.
Add the following:

| | | | | | |
|---|---|---|---|---|---|
| A12R13 | 0698-7219 | CD6 | RESISTOR 196 1% .05W F TC=0 +−100 | 24546 | C3-1/8-TO-196R-G |
| A12R14 | 0698-7248 | CD1 | RESISTOR 3.16K 1% .05W F TC=0+−100 | 24546 | C3-1/8-TO-3161-G |
| A12R15 | 0698-7255 | CD0 | RESISTOR 6.19K 1% .05W F TC=0+−100 | 24546 | C3-1/8-TO-3161-G |

Page 8-29, Figure 8-24, ASSY A12 REAR:
Add resistor R13 above C3.
Add resistor R14 and R15 between U21 and U20 with A14 above R15.

Page 8-29, Figure 8-25:
Replace with attached Figure 8-25 (CHANGE 5).

## CHANGE 6

Page 6-15, Table 6-2:
Change the HP and Mfr Part Number of W1 to: 08620-60170.
Page 8-33, Figure 8-30:
Replace the primary portion of Figure 8-30 with Figure 2 in this supplement.

**CHANGE 6 (Cont'd)**

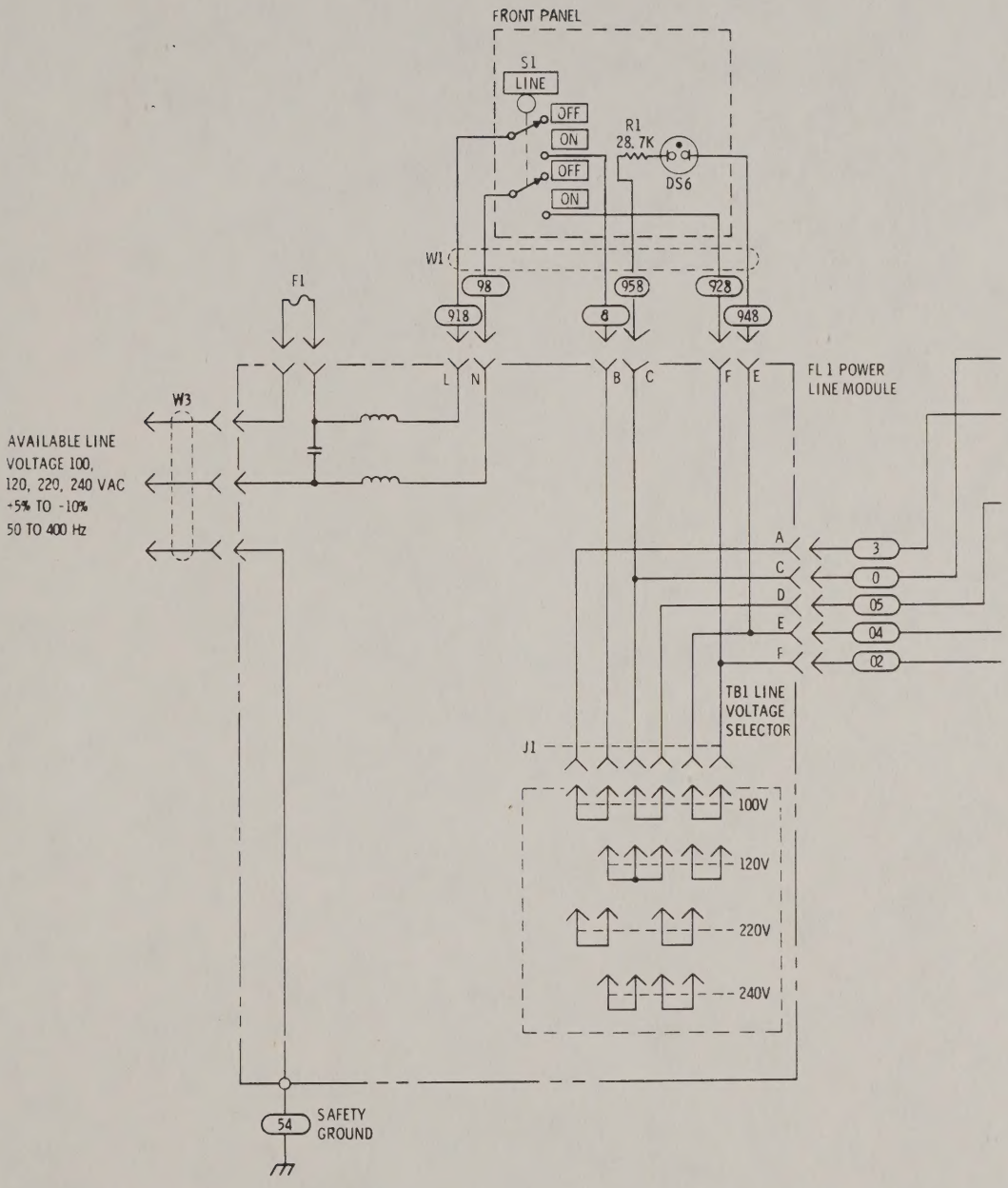



*Figure 2. Primary Power Wiring*

**►CHANGE 7**

Page 6-11, Table 6-2:

Change A6 HP and Mfr part numbers to: 08620-60169.

Add the following part numbers and descriptions:

A6R3 to A6R18, CD8, 0698-7253, RESISTOR 5.11K 1% .05W F TC=+–100, 24546, C3-1/8-TO-5111-G

Page 8-27, Figure 8-22 and Figure 8-23:

Replace with Figure 8-22 and Figure 8-23 in this change sheet.